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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/679,726

10/06/2003

David Haase

EMC-03-100CIP2

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11/02/2006

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EXAMINER

FARROKH, HASHEM

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/679,726

Applicant(s)

HAASE ET AL.

Examiner

Hashem Farrokh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-11 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-11, 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This Office Action in response to the Applicant's Remarks filed on 10/17/06. The instant application having application No. 10/679,726 has a total of 9 claims pending in the application; claims 1, 8-11, and 15 have been amended; claims 5-7 and 12-14 have been canceled; no new claims have been added.

The terminal disclaimer filed on 7/17/06 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Application No. 10/679,726 has been reviewed and is accepted. The terminal disclaimer has been recorded.

INFORMATION CONCERNING CLAIMS:

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-4 and 8-11, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,898,681 B2 to Young.

5. *In regard to claim 1, Young teaches:*

"In a data storage environment having a first volume of data denominated as the source being stored on a data storage system (column 4, lines 11-15; element 6 in Fig. 1), and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system or on another data storage system (column 4, lines 11-15; element 8 in Fig. 1), a method of managing the data content during a restoration of the source," (e.g., see

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column 1, lines 61-64; column 7, lines 30-38; element 4 in Fig. 1). *For example the master store or volume represents the first volume and shadow store or volume represents the clone volume recited in the claim. The shadow store contains the point in time copy of master data, which is used for controlling, or managing data during the restoration of the master or the source. When data is overwritten, a new point in time copy is created and the previous point time is protected (e.g., not overwritten).*

“the method comprising the steps of:”

“restoring the source by copying data content from the clone to overwrite the data content of the source,” **(e.g., see column 10, lines 7-10; column 11, lines 55-62).** *For example Young, in column 10, lines 7-44 and flow diagram in Fig. 6c, teaches the restoration step for recovery or restoration of master store or source from the shadow store or clone.*

“allowing host reads and writes to the source during the restoration;” **(e.g., see column 7, lines 18-38; column 8, lines 56-61; column 10, lines 20-26).**

“if preserving the data content of clone is selected, then not allowing the data content of the clone to be overwritten by host writes during the restoring step.” **(e.g., see column 10, lines 27-32; column 11, lines 23-30; column 20, lines 4-7; Fig. 10).** *For example the point-in-time copies in shadow store are preserved.*

“if preserving the data content is not selected, then overwriting the data content of the clone during the restoring step and determining extents on the source affected by any host write request;” **(e.g., see column 10, lines 18-26; column 11, lines 8-22; column 20, lines 1-3).** *For example if the user select not to preserve the previous point time*

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copy, the user instruct the controller to overwrite or update the current point time copy and update the bitmap to indicate the extents (e.g., blocks) affected.

"if any extents affected by the host write request are involved in the restoration and preserving is not selected, then setting an indicator to indicate that the extents need to be re-copied." (e.g., see column 10, lines 24-26; column 11, lines 8-22; Fig. 10). For example if the user select not to preserve a point time copy, the point in time copy is overwritten and the corresponding bit in the bit map is set.

6. *In regard to claims 2 and 9 Young teaches:*

"wherein the source and the clone are each represented by respective first and second logical units." (column 2, lines 35-40; column 4, lines 11-15). For example Young teaches that that a plurality of volumes are grouped together as a single logical device (e.g., source logical unit). The point in time copy of logical device is stored in shadow storage, which is in separate volumes, or logical device, which represents the clone logical unit recited in the claim.

7. *In regard to claims 3 and 10 Young teaches: "wherein a map denominated as a protected restore map is used to track extents of the source that are modified during the restoring and preserving steps." (e.g., see column 8, lines 22-40; Fig. 6a). For example when a block in the master store is overwritten (e.g., modified), a corresponding bit in the shadow bit map is set to logic 1.*

8. *In regard to claims 4 and 11 Young teaches:*

"wherein a map denominated as a clone delta map is used to track extents of the clone that are different between the clone and the source." (e.g., see column 8, lines 22-40;

Fig. 6a). *For example copy bit map which represent clone delta map recited in the claim is used to track the data blocks which are different between the master and shadow stores. A logic 1 in the copy bit map indicates that the corresponding data in the master store is different from the shadow store. When data copied from the master to the shadow store the corresponding bit in the copy bit map is being set to a logic 0 indicating that both master store and shadow store contain identical data*

9. *In regard to claim 8, Young teaches:*

A system (**column 22, lines 24-26**) for managing data content during restoration of data from a second volume of data to a first volume of data," (**e.g., see column 1, lines 61-64; column 7, lines 30-38; element 4 in Fig. 1**).

"the system comprising:"

"a data storage system having a first volume of data denominated as the source being stored on a data storage system (**column 4, lines 11-15; element 6 in Fig. 1**), and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system or on another data storage system;" (**e.g., see column 4, lines 11-15; element 8 in Fig. 1**).

"computer-executable program logic configured for causing the following computer-executed steps to occur;" (**e.g., see column 25, lines 1-31; column 27, lines 38-46**).

"restoring the source by copying data content from the clone to overwrite the data content of the source;" (**e.g., see column 10, lines 7-10; column 11, lines 55-62**).

"allowing host reads and writes to the source during the restoration;" (**e.g., see column 7, lines 18-38; column 8, lines 56-61; column 10, lines 20-26**).

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"if preserving the data content of clone is selected, then not allowing it to be overwritten by host writes during the restoring step." (e.g., see column 10, lines 27-32; column 11, lines 23-30; column 20, lines 4-7; Fig. 10). *For example a point in time copy of data to be overwritten is being saved in the shadow store. Therefore, a copy of data to be overwritten is preserved.*

"if preserving the data content is not selected, then overwriting the data content of the clone during the restoring step and determining extents on the source affected by any host write request;" (e.g., see column 10, lines 18-26; column 11, lines 8-22; column 20, lines 1-3). *For example if the user select not to preserve the previous point time copy, the user instruct the controller to overwrite the point time copy and update the bitmap to indicate the extents (e.g., blocks) affected.*

"if any extents affected by the host write request are involved in the restoration and preserving is not selected, then setting an indicator to indicate that the extents need to be re-copied." (e.g., see column 10, lines 24-26; column 11, lines 8-22; Fig. 10). *For example if the user select not to preserve the earlier point time, the point in time copy is overwritten and the corresponding bit in the bit map is set.*

10. *In regard to claim 15, Young teaches:*

A program product (e.g., column 4, lines 17-19) for use in a data storage environment and being for protecting data content during restoration of data from a second volume of data to a first volume of data," (e.g., see column 1, lines 61-64; column 7, lines 30-38; element 4 in Fig. 1).

"wherein the data storage environment includes:"

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"a data storage system having a first volume of data denominated as the source being stored on a data storage system (**column 4, lines 11-15; element 6 in Fig. 1**), and a second volume of data denominated as the clone and which has data content that is a copy of the data content of the source being stored on the data storage system or on another data storage system;" (**e.g., see column 4, lines 11-15; element 8 in Fig. 1**).

"the program product includes computer-executable logic contained on a computer-readable medium and which is configured for causing the following computer-executed steps to occur;" (**e.g., see column 25, lines 1-31; column 27, lines 38-46**).

"restoring the source by copying data content from the clone to overwrite the data content of the source;" (**e.g., see column 10, lines 7-10; column 11, lines 55-62**).

"allowing host reads and writes to the source during the restoration;" (**e.g., see column 7, lines 18-38; column 8, lines 56-61; column 10, lines 20-26**).

"if preserving the data content of clone is selected, then not allowing it to be overwritten by host writes during the restoring step." (**e.g., see column 10, lines 27-32; column 11, lines 23-30; column 20, lines 4-7**). *For example a point in time copy of data to be overwritten is being saved in the shadow store. Therefore, a copy of data to be overwritten is preserved.*

"if preserving the data content is not selected, then overwriting the data content of the clone during the restoring step and determining extents on the source affected by any host write request;" (**e.g., see column 10, lines 18-26; column 11, lines 8-22; column 20, lines 1-3**). *For example if the user select not to preserve the previous point time*

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copy, the user instruct the controller to overwrite the point time copy and update the bitmap to indicate the extents (e.g., blocks) affected.

"if any extents affected by the host write request are involved in the restoration and preserving is not selected, then setting an indicator to indicate that the extents need to be re-copied." (e.g., see column 10, lines 24-26; column 11, lines 8-22; Fig. 10). For example if the user select not to preserve the earlier point time, the point in time copy is overwritten and the corresponding bit in the bit map is set.

Response to Applicant's Remarks

Applicant amendment/cancellation of claims has overcome the rejection of 35 USC 112, second paragraph. As noted above because of applicant filing of the terminal disclaimer, the double-patenting rejection is withdrawn in this Office Action.

In regard to prior rejection the examiner maintain his position. Applicant has amended the independent claims 1, 8, and 15 to replace "the during restoration" to "the during restoring steps". However, as shown above by referring to some portions of Young's disclosure, the examiner believes that Young teaches the limitations as recited in the claims.

Conclusion

Any inquiry concerning this communication should be directed to Hashem Farrokh whose telephone number is (571) 272-4193. The examiner can normally be reached Monday-Friday from 8:00 AM to 5:00 PM.

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If attempt to reach the above noted Examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Donald A Sparks, can be reached on (571) 272-4201.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBS) at 866-217-9197 (toll-free).

HF
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2006-10-30

Brian R. Peugh
Brian R. Peugh
Primary Examiner
10/30/06